

## The Development of Mass Transfer Simulator in Artificial Lung Assist Device

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The purpose of this work was considered a simulator to manufacture the artificial lung assist device, and the use of a mathematical model to predict a behavior of blood. We tried to formularize prediction equations to predict the mass transfer rate and pressure drop in order to design an intravenous artificial lung assist device. This simulation was carried out according to the Montecarno's simulation method, and a fourth order Runge-Kutta method was used to solve the equation. As the results, we could estimate the mass transfer rate as a function of the hydraulic diameter of device. The mass transfer rate obtained from the experiment was similar to that predicting by the equation, confirming the usefulness of the equation. We were also able to, estimate the pressure drop as a function of the hydraulic diameter of device. The pressure drop obtained from the experiment was similar to that from the equation, again confirming the equations usefulness. Therefore, these functions are very useful for predicting the mass transfer rate and the pressure drop of the artificial lung assist device.